S70(EP78)
SERVICE MANUAL

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SECTION 1
MAINTENANCE PROCEDURE

PREVENTATIVE MAINTENANCE TIPS

- Locate Suspension Elliptical™ Trainer in a cool, dry place.
- Make sure all bolts and fasteners are kept tight.
- Keep the display console free from fingerprints and salt build-up caused by sweat.
- Use a cotton cloth with water and a mild cleaning product to clean the Suspension Elliptical™ Trainer. Other fabrics, including paper towels, may scratch the surface. Do not use ammonia or acid- based cleaners.
- Clean the exterior of the machine thoroughly on a regular basis.

PREVENTATIVE MAINTENANCE SCHEDULE

Follow the schedule below to ensure proper operation of the product.

ITEM	DAILY	MONTHLY	BI-ANNUALLY	ANNUALLY
Display console		**CLEAN**		
All bolts and hardware			**INSPECT**	
Frame		**CLEAN**		**INSPECT**
Handlebars		**CLEAN**		
Plastic covers		**CLEAN**		
Footplates				**INSPECT**

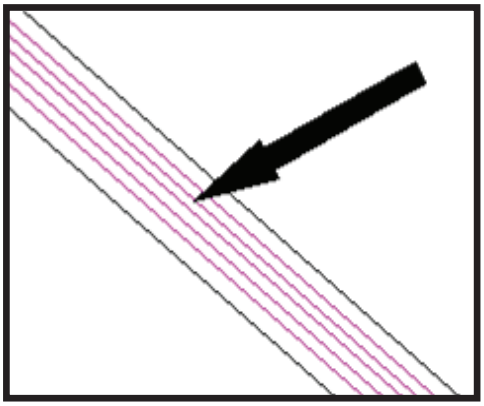
CLEANING THE GROOVES

Caution:

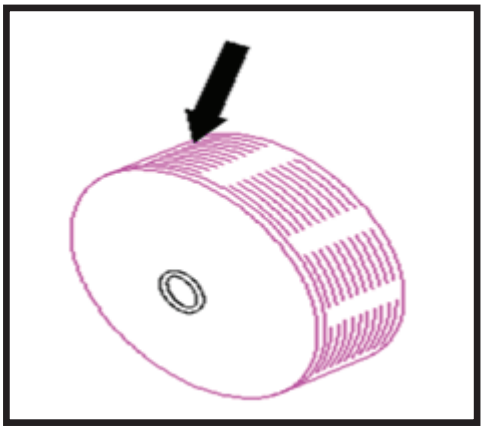
If there is any dust in the grooves of the Poly-V belts and pulleys, noises will be generated during operation.
Frequency: Every 3 to 4 months.

Procedure:

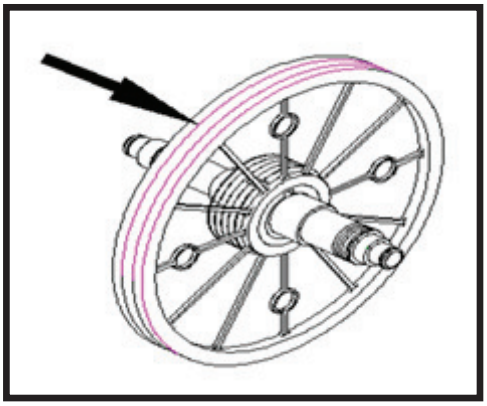
1.Remove the Poly-V belts and check the grooves of the belt for dirt or dust and clean it if any.



2.Check the grooves in the pulley for dirt or dust and clean it if any.

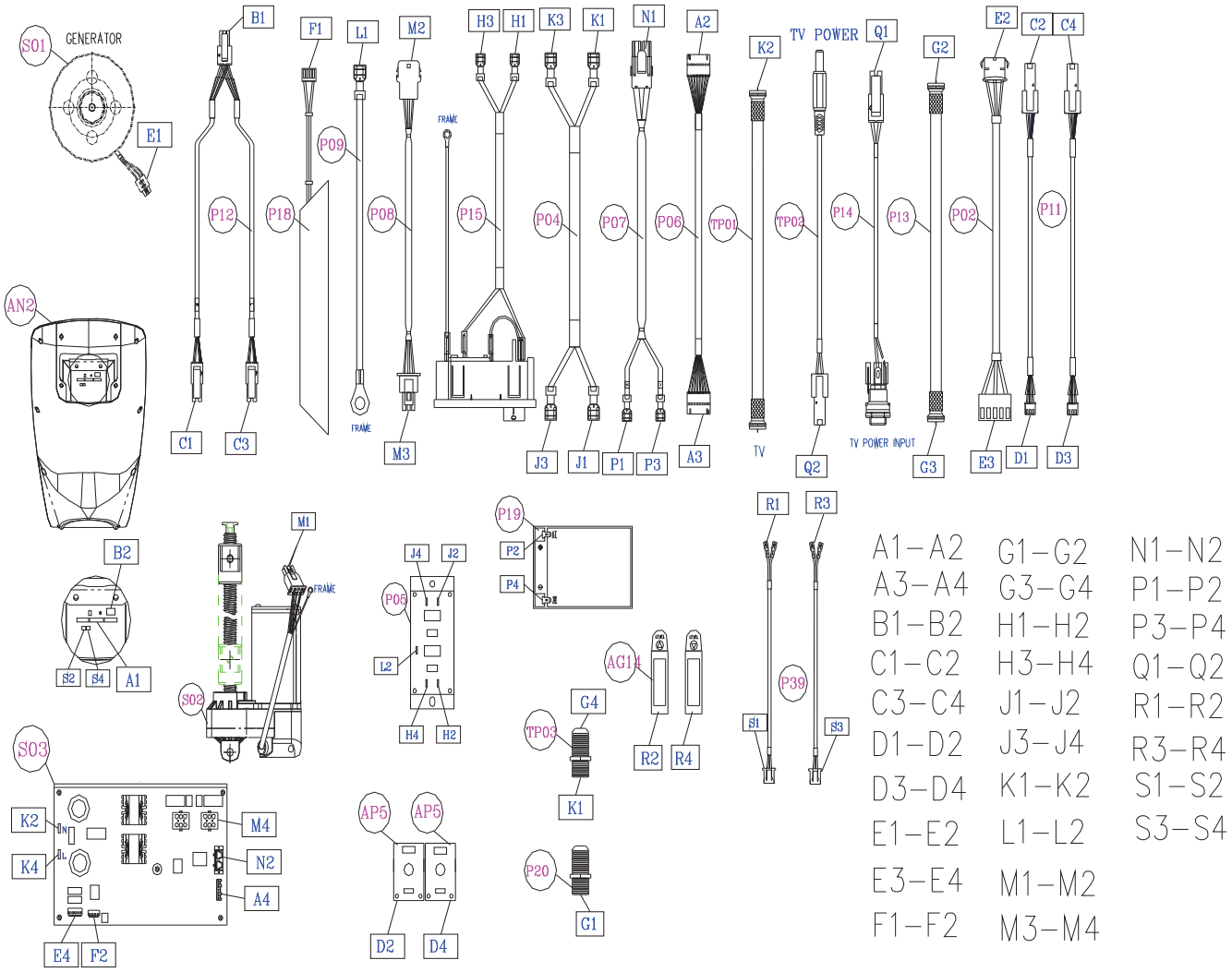


3.Check the grooves in the roller pulley for dirt or dust and clean it if any



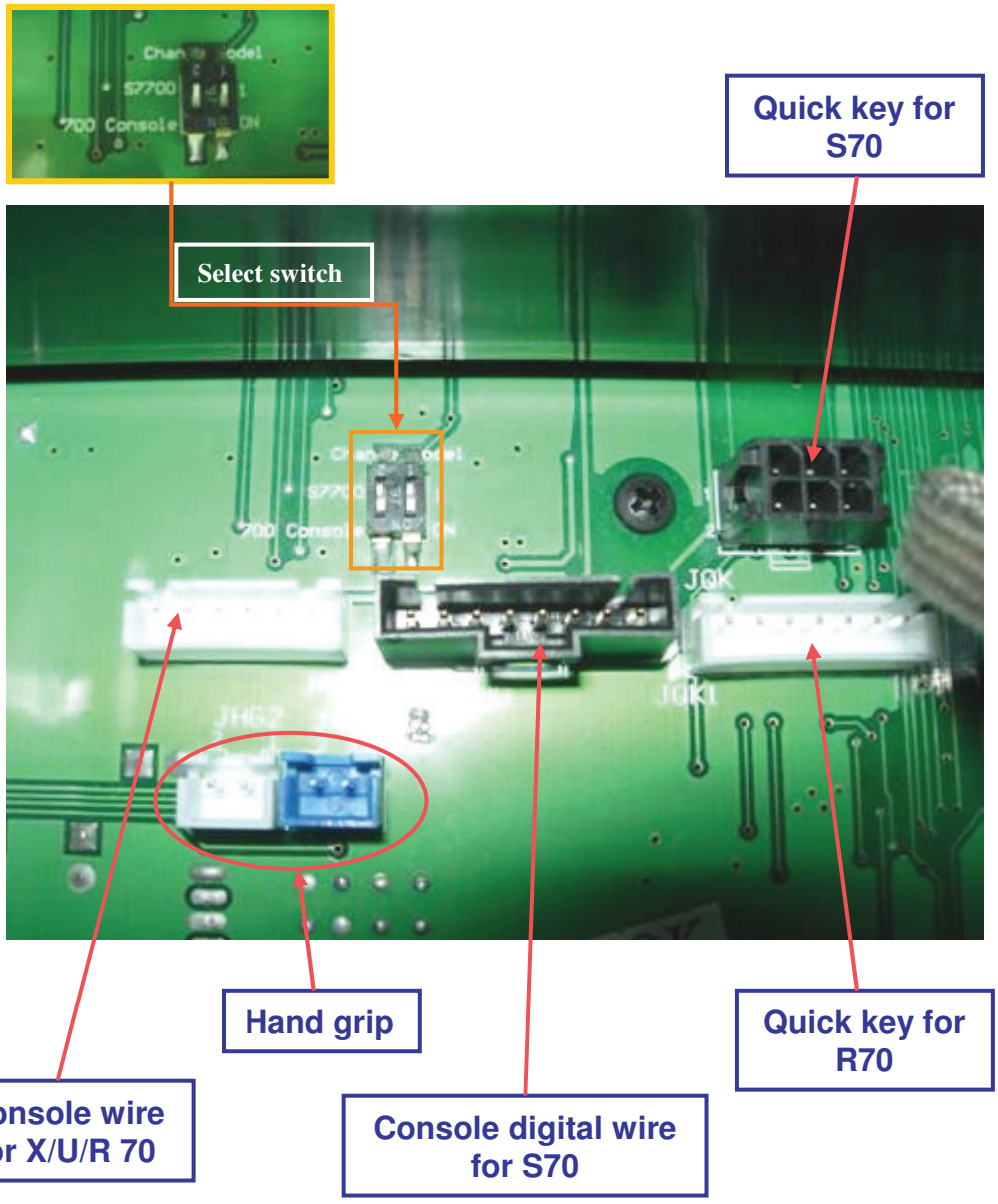
SECTION 2
WIRING DIAGRAM INSTRUCTION

S70 WIRING DIAGRAM INSTRUCTION

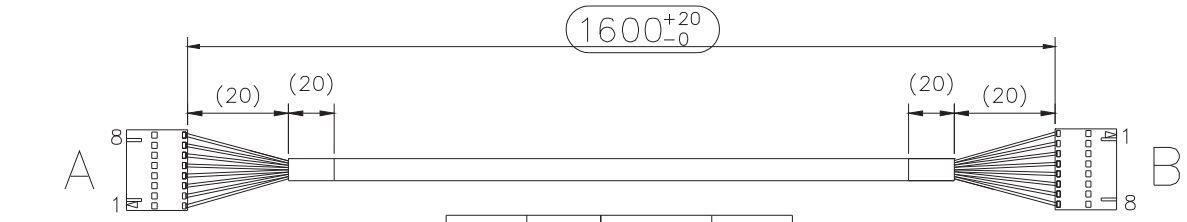


CONSOLE WIRING DIAGRAM

JKQ : quick key cable for S70
JKQ1 : quick key cable for R70
JKQ2 : console wire for X/U/R 70
JHG1/JHG2 : hand grip cable for all models
Select switch : to select current model by hand



P06 : Control wire

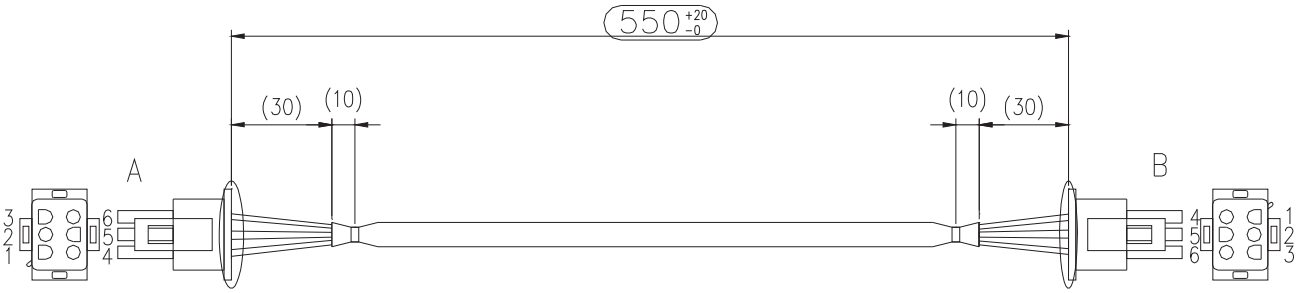


A.HOLE	B.HOLE	FUNCTION	COLOR
1	1	12V	紅
2	2	12V	
3	3	RDA	
4	4	N/C	
5	5	N/C	
6	6	RDB	
7	7	GND	黑
8	8	GND	

MOLEX,50-57-9408(PITCH 2.54mm)
Terminal:MOLEX,16-02-0087

MOLEX,50-57-9408(PITCH 2.54mm)
Terminal:MOLEX,16-02-0087

P08 : Incline Motor wire

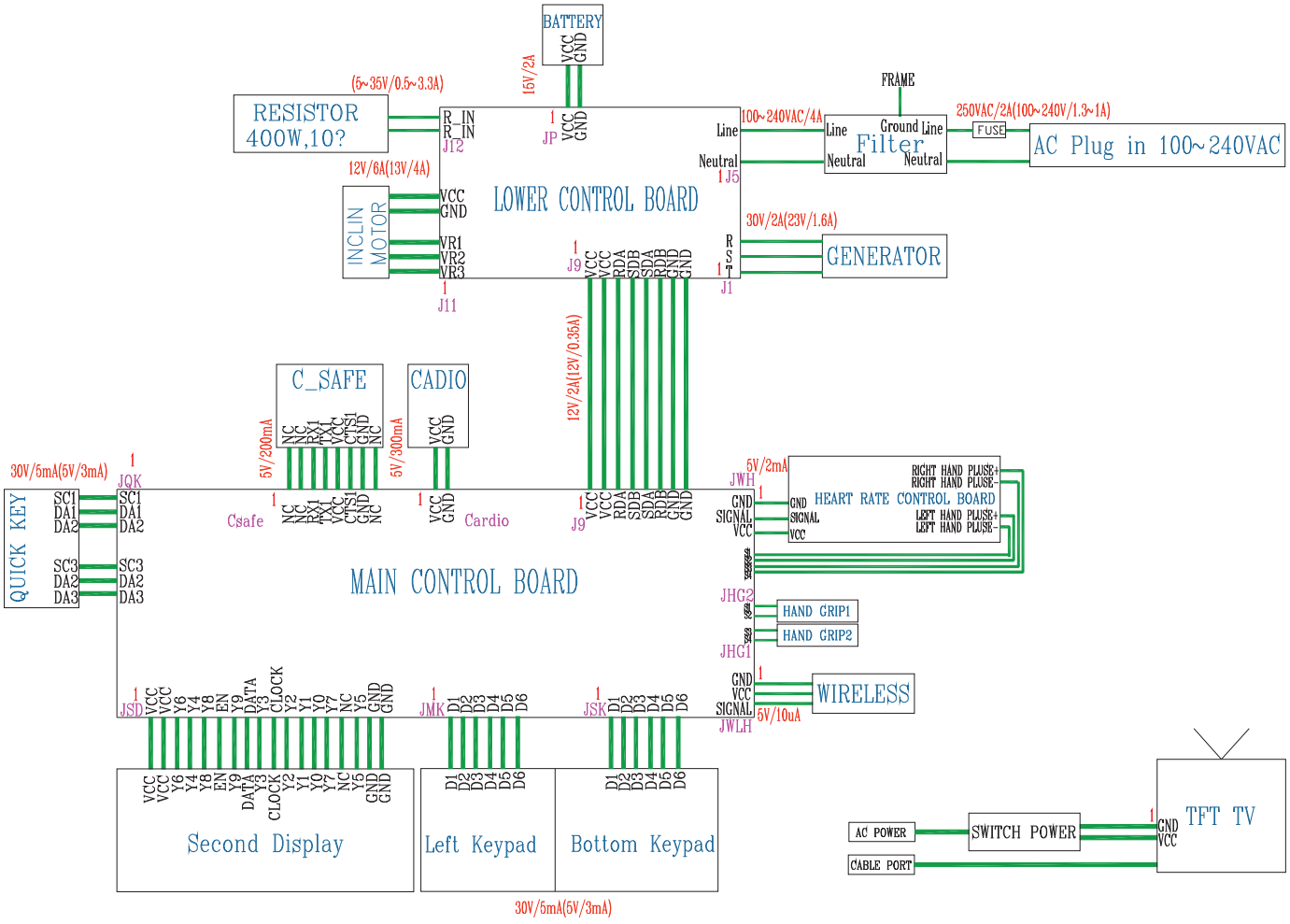


A: HOLE	B: HOLE	C: HOLE	FUNCTION
1	1		VCC
2	2		ADC
3	3		GND
4	4		MOTOR+(R)
5	5		NC
6	6		MOTOR-(B)

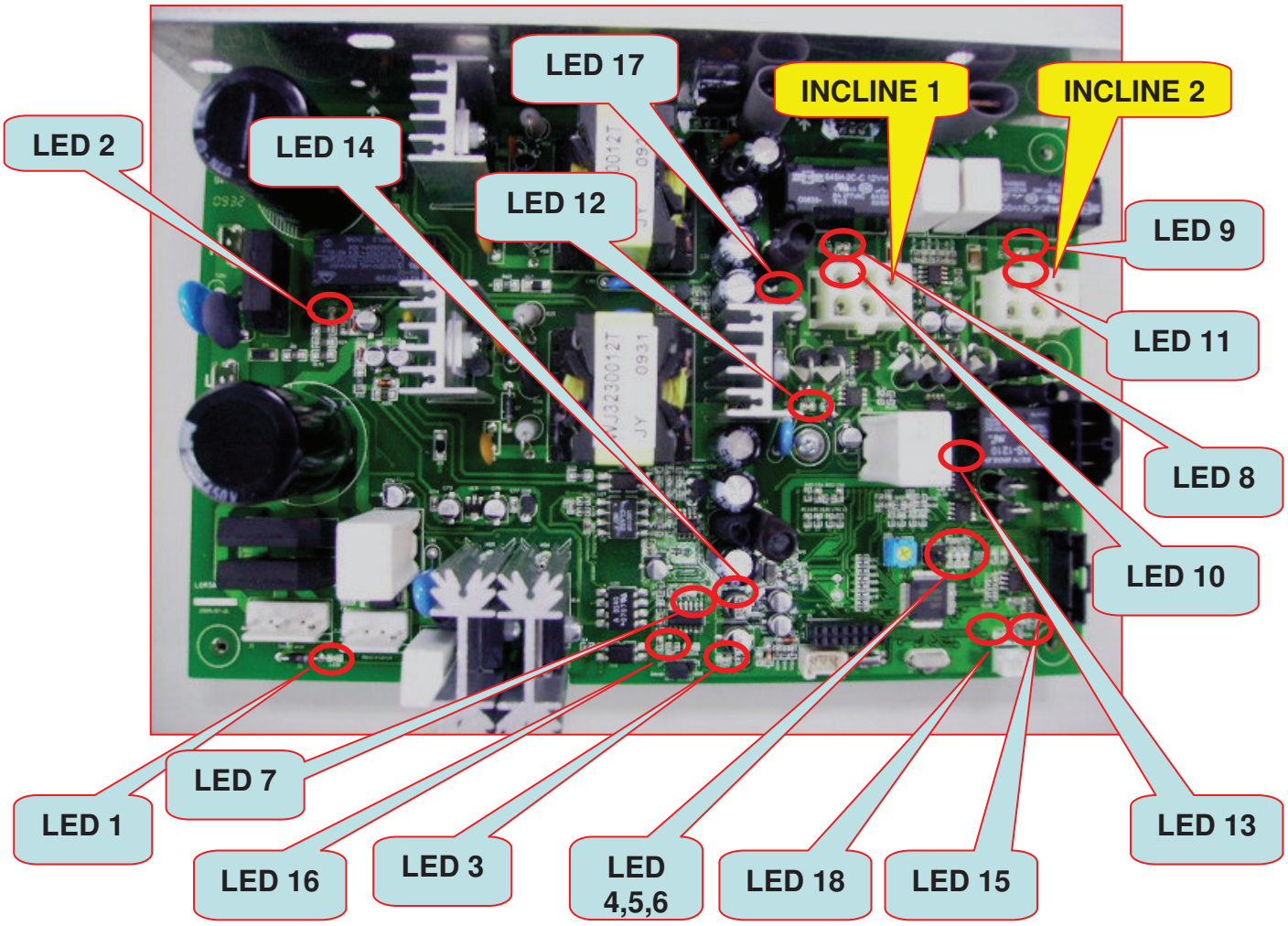
MOLEX,050-84-1060
(PITCH6.35mm)

MOLEX,050-84-1060
(PITCH6.35mm)

S70(EP78) Electrical block diagram



Lower Control Board LEDs Instruction—(1)



Lower Control Board LEDs Instruction—(2)

LED#	Color	Descriptions	LED#	Color	Descriptions
LED1	Red	Generator RPM	LED10	Green	INCLINE 1 down
LED2	Red	AC Plug IN	LED11	Red	INCLINE 2 down
LED3	Green	Vcc(5V)	LED12	Yellow	Charging (PWM)
LED4	Red	Status indicator (ref. Note)	LED13	Red	40HR-discharging
LED5	Red	Status indicator (ref. Note)	LED14	Green	12V/6A-main power
LED6	Red	Status indicator (ref. Note)	LED15	Green	Console power
LED7	Yellow	PWM-Resistance	LED16	Red	E_RPM-Extra power
LED8	Green	INCLINE 1 up	LED17	Green	15V/8A-Charge power source
LED9	Red	INCLINE 2 up	LED18	Red	FAN

LED 4 : (System operation display)		LED 5 : Error Message Display		LED 6	
Pulse times per sec.	Description	Pulse times per sec.	Description	Pulse times per sec.	Description
2 times	Self-Power System	2 times	Class B Error	2 times	Class C Error
1 times	AC Plug-in System	0.5 times	Class A Error	bright	NO Resistance Offset
		1 times	Burn-in (1)	0.5 time	Burn-in (1)

SECTION 3
CONSOLE ENGINEERING MODE GUIDE

ENTERING AND USING ENGINEERING MODE

1. Press and hold the UP ▲ and DOWN ▼ of RESISTANCE ARROW keys simultaneously for three seconds.
2. The console will beep and bring you into engineering mode. Use the UP ▲ or DOWN ▼ of RESISTANCE ARROW keys to scroll through the various engineering options.
3. Press the ENTER key to select the appropriate engineering option.
4. Use the UP ▲ or DOWN ▼ RESISTANCE ARROW keys within each setting to modify the setting
5. Press and hold the ENTER key to save the setting.
6. To exit engineering mode, press and hold the START key for three seconds.

KEY NAME	POSITION	FUNCTION
UP		Select function or adjust value
DOWN		Select function or adjust value
ENTER		Enter the function item
Hold “ENTER” key 3’s		To Save the change
Hold “ START” key 3’s		To back out of sub menu or exit to main menu
Hold RESISTANCE “ UP&DOWN” key 3’s		To enter engineering mode
Hold RESISTANCE “ UP&DOWN” key 3’s	On the “VERSION”	System Parameter RESET
Hold RESISTANCE “ UP&DOWN” key 3’s	On the “AC TIME” or “AC DIST”	To clear the AC Time or AC Distance
Hold ENTER key 3's	On “Incline Cal”	Incline Calibration

THE LIST OF MANAGER'S CUSTOM SETTING

CUSTOM SETTING	DEFAULT	MINIMUM	MAXIMUM	DESCRIPTION
MAX TIME	99 min	5 min	99 min	Set a maximum workout time
USER TIME	60 min	5 min	99 min	Set a default workout time
DF AGE	40	10	100	Set a default age for all programs
DF WEIGHT	80kg /150lbs	40kg /80lbs	182kg /400lbs	Set a default user weight for all programs
DF LEVEL	1	1	20	Set a default resistance level for all programs
DF GENDER	MALE	FEMALE	MALE	Set a default gender for all programs
UNIT	MILE	KM	MILE	Set the unit to miles or kilometers
MACHINE	EP	—	—	Set machine to bike or elliptical mode
AC TIME	0	0	999999 hr	Accumulate time
AC Distance	0	0	999999 mile	Accumulate distance
DISPLAY TEST	—	—	—	Used by service technicians to test LED displays
MACHINE TEST	—	—	—	For factory setting only
KEYPAD TEST	—	—	—	For keypad test
VERSION	—	—	—	Display Current software version
LANGUAGE	English			The native language prompts in the instruction center
INCLINE CAL				Incline calibration
INCLINE HOMING	ON	OFF	ON	On/off incline automation reset to zero position

SECTION 4
TROUBLESHOOTINGS

Error Messages on the Console

Code	Class	Description	Solution
0x0140	B	When UCB implements a Incline command, Incline is no action for 3 seconds.	Replace incline motor
0x0142	B	When the difference of the incline position is over and the difference is not reduction to 3% for 3 seconds.	Auto calibration or replace incline motors
0x0441	B	When UCB implements a command, LCB has no this command.	Upgrade new LCB software
0x01A1	C	Incline calibration error. When calibration time is too long or calibration distance is too short	Replace Incline motor
0x01A7	C	Incline is short circuit(7A) or that the current is over 5A for 1 second.	Replace Incline motors
0x01AC	C	Power resistor is short circuit (over 4A), or the current is over 3.7A for 1 second .	Check the connection of power resistor or replace power resistor
0x02AB	C	Machine Type Error	Setting to correct type of LCB
0x02B3	C	Resistance Type Error	Setting to correct type of LCB
0x04A0	C	If LCB have no message to return UCB over 3 seconds.	Replace LCB or UCB or check the communication cable disconnection
0x0201	A	LCB Battery Low Voltage	Check battery recharge function or replace new battery
0x0248	B	Battery disconnection or fail.	Check the connection of battery or replace new battery
0x01A0	C	Incline Motor no connection	Check the connection of incline motor or replace incline motor

All or some of the function keys do not respond

Possible causes:

1. Keypad connecting plug has been not fit-in properly.
2. Keypad is damaged.
3. Upper board is damaged.

Fix:

1. Enter to engineering mode “keypad test” to test.
2. Remove the console cover, and then check if keypad cable is connected properly to the upper board.
   If it has not been connected well, reconnect it to the terminal and check again.

3. Keypad or upper board is damaged.
   Replace the console.

Feel slipping while pedaling

Possible causes:

1. Belt tension is not enough.
2. One way bearing is damaged.

Fix:

1. Remove all of the cover.
2. Pedaling and check if the belt tension is correctly.
3. One way bearing is damaged. Replace it with a new one.

Knocking or creaking noises

Possible causes:

1. Pedal is on crank arm too loose
2. Crank or axle is wear out
3. Belt tension is too loose or poly v belt is too dirty

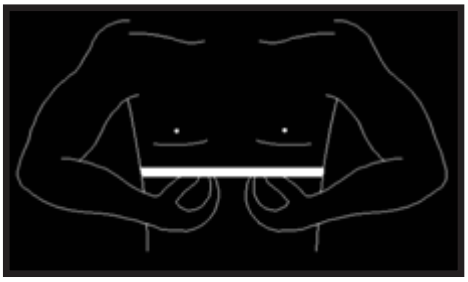
Fix:

1. Re-tighten it.
2. Replace it with a new one
3. Re-adjust the belt tension and clean the poly v belt

Heart-Rate-Control function does not work

Possible causes:

1. Bike does not contact with user's chest very well.
2. Bike (Polar-belt) is at low battery status.
3. Bike (Polar-belt) is damaged.
4. Heart-rate-control board is damaged.
5. PCB is damaged.



Fix:

1. Center the bike on your chest below the pectoral muscle(breast) as shown, then check again.
2. Remove the battery cover of the bike. Replace a new battery and check again.

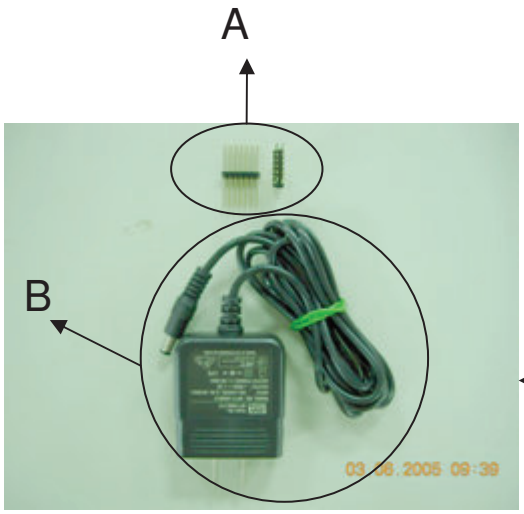
   Actually, as moisture may activate the transmitter, please dry transmitter after use.
3. Transmitter is damaged. Replace the Transmitter.
4. Heart-rate-control board is damaged. Replace the HR-control board.
5. PCB is damaged. Replace the PCB.

SECTION 5
SOFTWARE UPGRADE PROCEDURE

VISION S70 BIKE SOFTWARE UPGRADE SOP

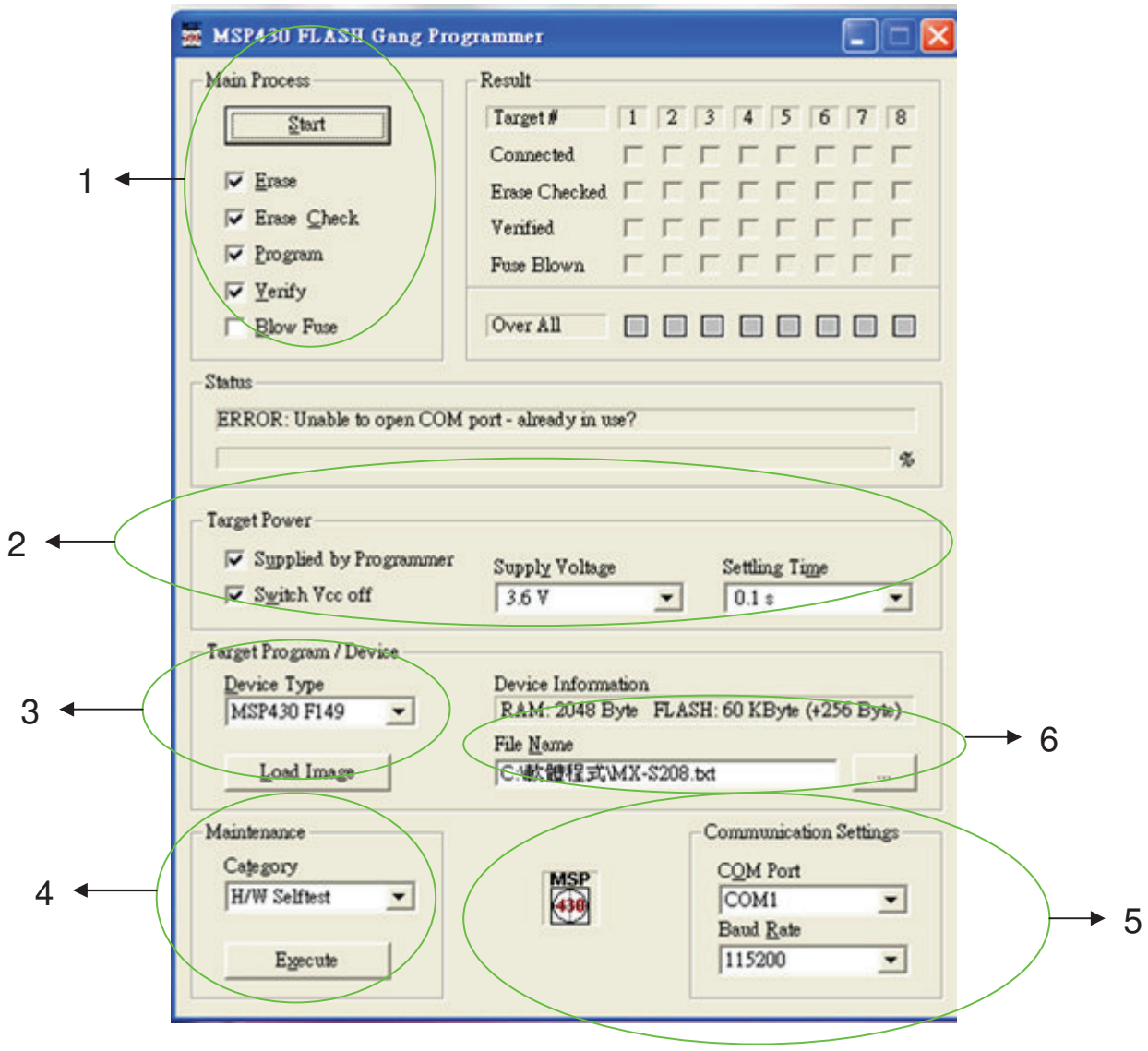
A. Service Tools & Accessories:

1. MSP-FET430 Tools
   (Parts number MTOOL-039)
2. Software



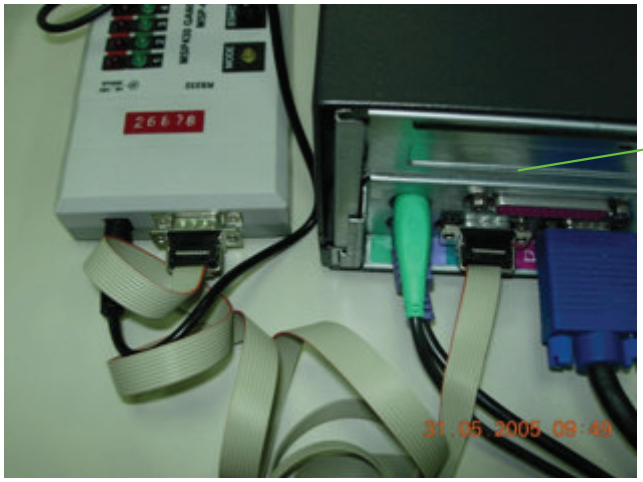
A : 14 pin
B : Power supply
specification:8~15V 300mA

MSP-FET430 Tools

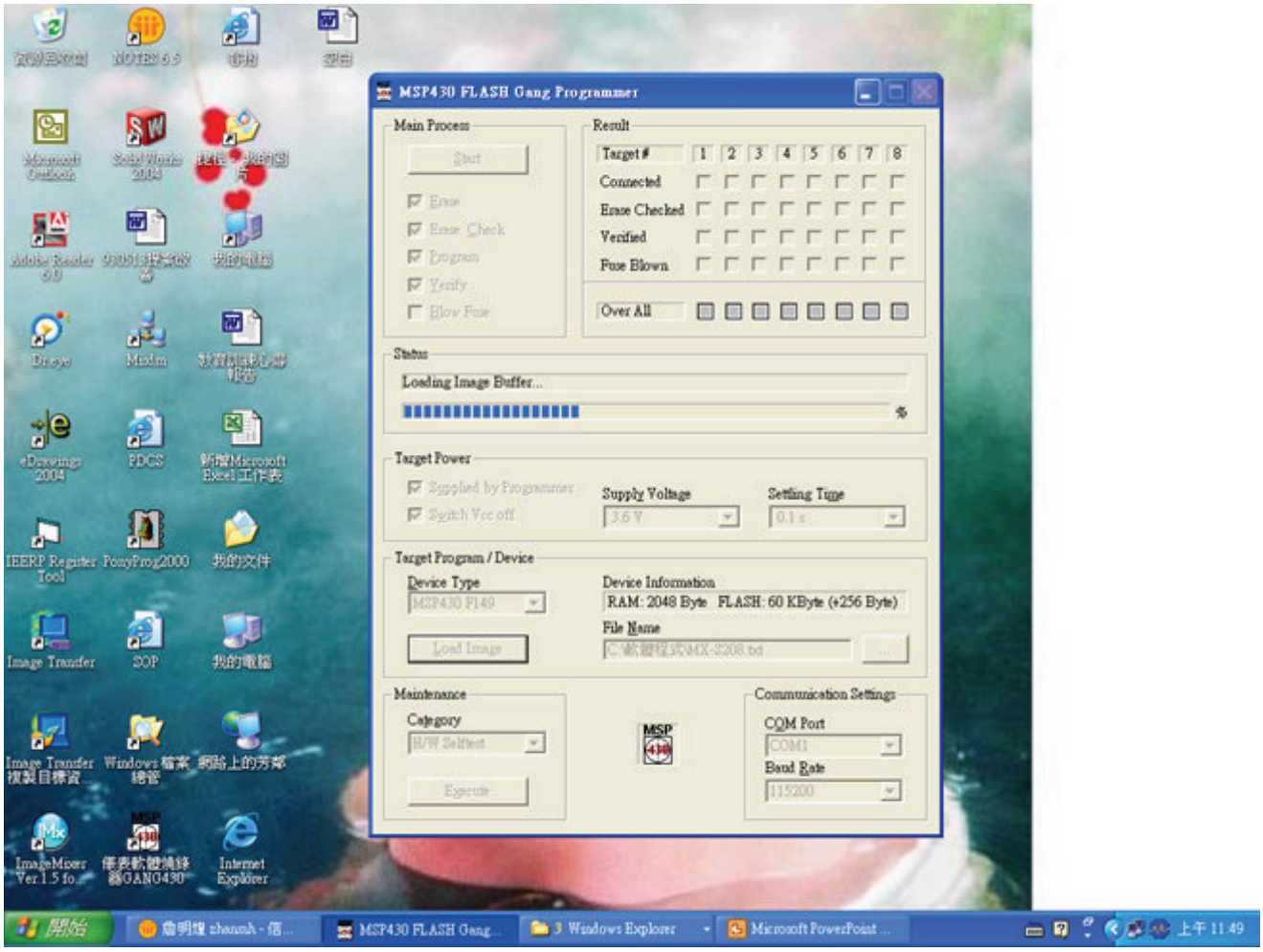


1.Please refer the above photo to set the parameter.

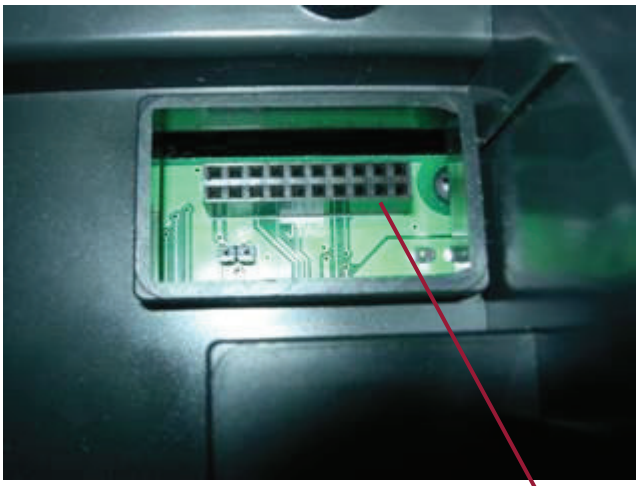
1-6 Press the File Name Find out the software version file in the computer and then actuate/open the file.



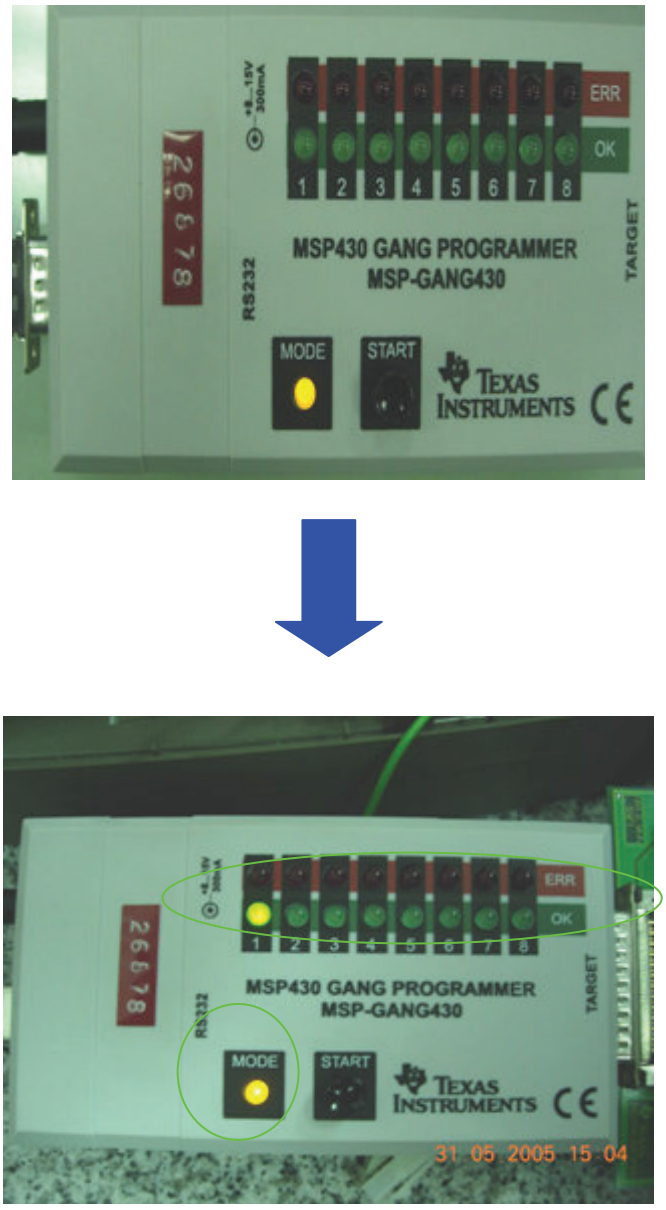
2. Install the MSP-FET430 Tools



3.Press the Load Image, Installation software to MSP-FET430 Tools.



4.Installing MSP-FET430 cable to console.



5. Press the MSP-FET430 “START” key, the “MODE” light will to glitter about 10 sec, If installing pass, the OK LET light.
6. Drive the machine to provide power for console and then enter into the engineering mode to confirm if the software had been installed/upgraded